

BENDIRE'S THRASHER

Toxostoma bendirei

Author: A. Sidney England, 830 Donovan Ct., Davis, CA 95616

Management Status: Federal: BLM Sensitive
California: Species of Special Concern (CDFG, 1998)

General Distribution:

The breeding season distribution of Bendire's Thrasher extends from southeastern California, southern Nevada, southern Utah, and southeastern Colorado, south through Arizona and western New Mexico to Sonora, northern Sinaloa, and extreme northern Chihuahua (Monson and Phillips, 1981; AOU, 1983; Alcorn, 1988; England and Laudenslayer, 1989a, 1993; Andrews and Righter, 1992; Howell and Webb, 1995). The distributional details within this general range are poorly understood and documented. Breeding populations are very patchily distributed; apparently suitable habitat is disjunct and many apparently suitable sites are not occupied. During the winter, Bendire's Thrashers withdraw from the breeding range in the Mojave and Great Basin deserts, on the Colorado Plateau, and on the Arizona/New Mexico Plateau (Hayward et al., 1976; Andrews and Righter, 1992; England and Laudenslayer, 1993). A winter record from southern Sinaloa suggests movement south of the breeding range (AOU, 1983), but Bendire's Thrashers may be regular winter visitors only to northern Sinaloa and casual further south (Phillips, 1986).

The breeding distribution of Bendire's Thrasher in California is restricted almost exclusively to the Mojave Desert. The most extensive and best known population is in the eastern Mojave Desert and extends in suitable habitat from the south side of the Kingston Range to the Old Woman Mountains and from near the Nevada-California border west to Halloran Summit and the Granite Mountains (Grinnell and Miller, 1944; England and Laudenslayer, 1993). In the northern and western Mojave Desert, Bendire's Thrashers are restricted to widely scattered locations supporting either Joshua Trees (*Yucca brevifolia*), other species of yuccas, or cholla cactus (*Opuntia* spp.). Large tracts of the desert, especially in the western Mojave Desert, support one or more of these plant species but lack thrasher populations. Bendire's Thrashers do breed very locally and sporadically in the Colorado Desert, where they are restricted to habitats with arborescent species such as palo verde (*Cercidium* spp.). This type of habitat is similar to that occupied in Arizona. Breeding records in the Colorado Desert are largely along the northern edges near the boundary with the Mojave Desert (e.g., near Vidal Junction and at Corn Springs) and in the northeast near the Colorado River (England and Laudenslayer, 1989a). Outside the breeding season, Bendire's Thrasher is a migrant and casual winter visitor (England and Laudenslayer, 1989a, 1993; Rosenberg et al., 1991).

Distribution in the West Mojave Planning Area:

The primary distribution of Bendire's Thrasher breeding habitat in the WMPA extends as a discontinuous band in suitable habitat from Joshua Tree National Park (JTNP) to near Victorville (England and Laudenslayer, 1989a). The most extensive and best documented population is in JTNP. Breeding birds in JTNP are typically found in the vicinity of locations such as Cottonwood Spring, Smoke Tree Wash, White Tank, Jumbo Rocks, Ryan Campground, Covington Flats, Queen Valley, Indian Valley, Lost Horse Valley, and along Salton View Road

(Miller and Stebbins, 1964; England and Laudenslayer, 1989a; B.G. Prescott, pers. comm.). Outside JTNP to the west, breeding records and habitat become more sparse and disjunct with observations over the last 25 years: (1) near Landers, Yucca Valley, Pioneertown, and Pipes Canyon, (2) between Apple Valley and Lucerne Valley along Desert View Road; and (3) on the flats at Sidewinder Mountain northeast of Apple Valley (England and Laudenslayer, 1989a). Pierce (1921) collected eggs from a Bendire's Thrasher nest and observed a female with juveniles near Victorville in 1920, but no recent records exist for this area (England and Laudenslayer, 1989a). A bird carrying food was observed near Victorville at Stoddard Mountain on May 22, 1969, but birds were not found at this location in either 1986 or 1987 during a desertwide survey for Bendire's Thrasher (England and Laudenslayer, 1989a). Disjunct breeding populations of Bendire's Thrasher are also in Superior Valley north of Barstow and in the vicinity of Butterbredt Springs and Kelso Valley at the western edge of the Mojave Desert (England and Laudenslayer, 1989a). A small number of breeding season observations have been reported during early April for scattered locations including California City and near Lancaster; however, breeding has never been confirmed in this part of the WMPA and these observations may be transients (England and Laudenslayer, 1989a).

Natural History:

Bendire's Thrasher is a medium-sized songbird measuring 9-10 in. (23-25 cm) in total length and weighing approximately 60 g (Ridgway, 1907; Dunning, 1984). Unlike other sympatric *Toxostoma* thrashers in California, the bill is only weakly decurved, and the eye is yellow. Nonetheless, this species can be confused with other thrashers in the Mojave Desert and care should be taken when making identifications, especially of immature birds. The sexes are indistinguishable in the field. For details on thrasher identification see Kaufman (1990), Garrett and Dunn (1984), and England and Laudenslayer (1993).

The ecology of Bendire's Thrasher is poorly documented and not well understood. Much of the existing information comes from anecdotal observations of nesting, distribution, and food habits collected in the late 1800's and early 1900's. Most of this information was gathered on birds in Arizona with little from the Mojave Desert.

Spring migration in California begins by February and early March, when birds occasionally appear in the southern Colorado Desert and continues through April and May when a few records exist for coastal California (England and Laudenslayer, 1989a). Birds seen during late May and early June in habitat not suitable for breeding may be late spring migrants, unsuccessful breeders, or post-breeding dispersers wandering away from breeding habitats. The end of spring migration may overlap with movements by early post-breeding dispersers and unsuccessful breeders. Singing birds begin to appear on the breeding grounds in late March and early April. An immature female Bendire's Thrasher collected on 21 June 1961 in pine-fir forest on Mt. Charleston, Clark Co., Nevada (Austin and Bradley, 1965) indicates that movements away from breeding habitats begin immediately after the end of the breeding season. Most Bendire's Thrashers leave breeding areas in the Mojave Desert of California by the end of July; a few individuals may remain into August or later. Most migrants move to wintering grounds in the southeast. Occasional individuals, from either California or elsewhere, move north and west and spend all or part of the winter in coastal California. Winter records at Lancaster, the south end of the Salton Sea, and near Bard suggest that a few birds may winter in the California deserts (England and Laudenslayer, 1989a).

Bendire's Thrashers typically construct an open, generally bowl-shaped nest similar to other *Toxostoma* thrashers. The construction is usually finer and the nest smaller and more compact than other thrashers. A typical nest has an outside diameter of approximately 12 in. (30 cm) and is 2.8-9.8 in. (7-25 cm) deep. The internal cup is symmetrical, lined with a variety of soft materials, and is typically 2-3.5 in. (5-9 cm) in diameter and 1.5-3.5 in. (4-9) cm deep. Nests are usually placed in a shrub, cactus, or tree. Common supporting plants include cholla, mesquite (*Prosopis* sp.), juniper (*Juniperus* spp.), and Joshua Tree and other species of yucca; a variety of other shrubs are also used (Brown, 1901; Gilman, 1909; Pierce, 1921; Johnson et al., 1948; Ligon, 1961; England and Laudenslayer, 1993).

Records of singing Bendire's Thrashers in California indicate that territorial behavior begins when birds first return to breeding areas beginning in mid-March and continues through mid-June, by which time most young from first nests are fledged. Presumed first clutches have been observed from late March through the end of April. Nestlings from first clutches in California have been recorded from early May through early June, and fledglings leave the nest between late April and mid-June (England and Laudenslayer, 1989a). The dates for various breeding phenology milestones are consistent with observations in Arizona (Brown, 1901). Some Bendire's Thrashers lay a second or even a third clutch in the same breeding season (Brown, 1901; Gilman, 1915). Brown (1901) examined about 500 nests in Arizona and reported that a 3-egg clutch is typical, 4-egg clutches are not uncommon, and there are two records for 5-egg clutches. Only five nests with eggs have been reported from California (England and Laudenslayer, 1989a); three nests contained four eggs each, and the other records did not report clutch size.

The diet of Bendire's Thrasher is primarily insects and other arthropods, but also includes seeds and berries (Ambrose, 1963). Anecdotal reports of birds observed foraging or carrying prey to the nest indicate the diet is dominated by grasshoppers, beetles, caterpillars, and other larvae and pupae. Seeds and fruit are taken less often (Woodbury, 1939; Engels, 1940; Bent, 1948). The only quantitative study that examined stomach contents found that the diet was dominated by ants, termites, and lepidoptera larvae (Ambrose, 1963).

Bendire's Thrashers forage primarily on the ground (Engels, 1940; Ambrose, 1963), but will also glean vegetation for insects and pluck fruit (Ambrose 1963). They use the bill to peck and probe, and to hammer into the ground (Engels, 1940). They will dig with the bill, but digging is not believed to be as powerful or efficient, and this technique is used less frequently than other thrashers (Ambrose, 1963). They do not scratch with their feet (Engels, 1940; Ambrose, 1963), and Bent (1948) reported one observation of a bird "running along between plant rows, occasionally jumping up into the air as if catching insects."

Habitat Requirements:

The breeding season habitat of Bendire's Thrashers in California is typically described as Mojave desert scrub with either Joshua Trees, Spanish Bayonet (*Yucca baccata*), Mojave Yucca (*Y. schidigera*), cholla cactus (*Opuntia acanthocarpa*, *O. echinocarpa*, or *O. ramosissima*), or other succulents (Grinnell and Miller, 1944; Bent, 1948; Garrett and Dunn, 1981; England and Laudenslayer, 1989a). However, the species composition of the shrubs within these habitats is highly variable (England and Laudenslayer, 1989a). At most sites surveyed by England and Laudenslayer (1989a), the dominant shrubs were Creosote Bush (*Larrea tridentata*), Cheese Bush (*Hymenoclea salsola*), Nevada Mormon Tea (*Ephedra nevadensis*), Burro Bush (*Ambrosia*

dumosa), and Big Galleta (*Pleuraphis rigida*). Most often, the shrub composition was extremely diverse and included California Buckwheat (*Eriogonum fasciculatum*), Hop-sage (*Grayia spinosa*), Cooper Box Thorn (*Lycium cooperi*), Anderson Box Thorn (*L. andersonii*), rhatany (*Krameria* spp.), Bladder sage (*Salazaria mexicana*), and goldenbush (*Ericameria* spp.) as other common species. In the eastern Mojave Desert, Bendire's Thrashers also occurred at higher elevations where the vegetation was dominated by Blackbush (*Coleogyne ramosissima*) with scattered junipers (*Juniperus osteosperma*, *J. occidentalis*, or *J. californica*), Joshua Trees, and cholla cactus (England and Laudenslayer, 1989a). On Lee Flat in the extreme northern Mojave Desert, the vegetation had a sparse overstory of Joshua Trees, but the understory consisted primarily of saltbush (*Atriplex confertifolia*), Hop-sage, Winterfat (*Krascheninnikovia lanata*), and Spiny Menodora (*Menodora spinescens*).

England and Laudenslayer (1989b) compared habitat parameters at points where Bendire's Thrashers were found with those where they were absent, and identified several habitat relationships in the Mojave Desert of California. First, points where Bendire's Thrashers were found had significantly denser total succulent and arborescent species, denser columnar cholla cactus, and denser Mojave Yucca and Spanish Bayonet than points that lacked the thrasher. There was no difference in the densities of Joshua Trees between points with and without the bird. The height of succulent and arborescent species also did not differ between points with and without the thrasher.

Second, Bendire's Thrashers were found at sites lacking either Mojave Yucca and Spanish Bayonet, Joshua Trees, or columnar cholla cactus. Probable breeding birds were never found at sites lacking all three, and either Joshua Trees or Mojave Yucca and Spanish Bayonet were always present. These results confirm that yuccas, Joshua Trees, and columnar cholla cactus are important components of Bendire's Thrasher breeding habitat, and for California, they strongly suggest an interrelationship between the biology of the thrasher and members of the genera *Yucca* and *Opuntia*.

Third, sites with Bendire's Thrasher had significantly denser populations of perennial shrubs and higher shrub cover than sites lacking the thrasher. Vegetation height did not differ significantly with presence or absence of the thrasher.

Lastly, soil surface texture at sites with Bendire's Thrashers had significantly less sand, rock, and desert pavement, and more firmly packed dirt than sites without the thrasher. Bendire's Thrashers occurred less frequently on soft, sandy soils and on hard, rocky soils. Presumably this pattern was related to the fact that this species forages on the ground and the bill is used to peck, probe and hammer in the soil, but not for digging (Engels, 1940).

The habitat relationships of Bendire's Thrasher may help explain the absence of this thrasher from most of the Antelope Valley in the western Mojave Desert. Compared to sites with Bendire's Thrashers, soils at sites in the western Mojave sampled by England and Laudenslayer (1989b) had a more sandy surface texture, less firm dirt, and lower soil hardness. Mojave Yucca and Spanish Bayonet did not occur on the Antelope Valley study sites, and columnar cholla cactus were rare compared to other areas in the Mojave Desert. Perennial vegetation in the Antelope Valley had a lower absolute density and lower percent cover than areas with Bendire's Thrashers. Thus, although Joshua Trees are found in much of the Antelope Valley and adjacent bajadas, other important habitat components seemed lacking. Therefore, this part of the western Mojave Desert may be unsuitable for breeding populations of Bendire's Thrasher.

Population Status:

Historically, the primary breeding distribution of Bendire's Thrashers was considered to be the eastern Mojave Desert near Lanfair Valley, Cima Dome, and Clark Mountain (Grinnell and Miller, 1944; Garrett and Dunn, 1981). Grinnell and Miller (1944) considered the population to be "far scattered and aggregate numbers small." Garrett and Dunn (1981) considered Bendire's Thrasher to be a "fairly common but very local summer resident on the Mojave Desert, primarily in e. San Bernardino County," and noted that it bred in smaller numbers on the southern Mojave Desert south to the vicinity of Victorville and JTNP. Remsen (1978) considered the total California breeding population of Bendire's Thrasher to be under 200 pairs. Based largely on this information, the species was placed on the list of Bird Species of Special Concern by the California Department of Fish and Game (Remsen, 1978). The reasons cited for listing included small and locally distributed populations and threats from off-road vehicle use, overgrazing, and harvesting of Joshua Trees and other species of yucca.

The results of the Bendire's Thrasher survey conducted by England and Laudenslayer in 1986 and 1987 indicated the following status of Bendire's Thrashers in the deserts of California:

Bendire's Thrashers continued to occupy all parts of the historical breeding range in the eastern Mojave Desert and at Joshua Tree National Park, and the ranges in both areas were larger than previously reported.

Previously unreported, small, isolated populations existed at other scattered locations in the southern, central, northern, and western Mojave Desert. Observations over several years suggested that small isolated populations in Superior and Kelso valleys were either permanent and previously undetected or persist only a few years.

Existing information was inadequate to determine whether Bendire's Thrasher populations were increasing, decreasing, or stable.

Bendire's Thrashers had been reported from parts of the Colorado Desert including documented breeding records. However, the status of this thrasher in the Colorado Desert was unknown.

No additional studies of Bendire's Thrasher in California have been conducted since the 1986-87 survey, and the status of this species cannot be further defined. England and Laudenslayer (1989b) recommended additional research (1) to locate new populations, (2) to determine population sizes, and (3) to establish whether small isolated populations are permanent or undergo regular extinction and recolonization.

Threats Analysis:

The primary reasons for concern about the status of Bendire's Thrasher populations in California are their disjunct distribution, apparently isolated populations, and presumed small population size. However, systematic surveys of breeding birds in New Mexico (Darling, 1970) and California (England and Laudenslayer, 1989a) greatly expanded the known distributions in both states. Regional surveys apparently are not available from other areas. Virtually no

quantitative information is available about population densities, and most of our understanding of potential threats is based on an almost anecdotal knowledge of the ecology of this species.

The most obvious potential threat would be loss of breeding habitats to urban and agricultural development. Habitat destruction or degradation could potentially eliminate one of these small, localized populations. In some settings Bendire's Thrashers can persist in rural areas with scattered dwellings near native vegetation (Gilman, 1909, 1915a; Rea, 1983; England and Laudenslayer, 1989a) and in agricultural areas with fields bordered by mesquite and other shrubs (Ambrose, 1963). No information is available on how the intensity or extent of development relates to population declines or increases. Populations have been eliminated by dense urbanization around Tucson (Emlen, 1974) and by large scale agriculture along the Gila River (Rea, 1983). Phillips et al. (1964) suggest the species is favored by clearing and agricultural activities in some Sonoran Desert habitats and is probably much more common in Arizona now than originally. In contrast, Ambrose (1963) states the species has declined in Arizona due to habitat destruction. For New Mexico, Darling (1970) suggests that range of Bendire's Thrasher has expanded because overgrazing greatly expanded the area with scattered junipers. Remsen (1978) states that potential threats to populations in California include harvesting of Joshua Trees and other yuccas, overgrazing, and off-road vehicle activity, but no qualitative information is available to confirm these impacts.

Biological Standards:

Joshua Trees, other yuccas, and columnar cholla are required components of Bendire's Thrasher habitat in the Mojave Desert of California. In addition, Bendire's Thrashers are found at sites where perennial shrub are more dense and shrub cover is higher than sites where the species is absent. These types of sites are on higher elevation bajadas and valleys where the environment is more moist. Management of all land uses in known and potentially suitable Bendire's Thrasher habitat should be designed to promote the long-term sustainability of these relatively rich desert scrub habitats. The types of activities that should be managed include but are not limited to grazing, off-highway vehicle use, fire, and commercial and illegal removal of succulents, yuccas, and Joshua Trees. Because Bendire's Thrashers apparently avoid extremely hard soils and soft sandy soils, land uses within suitable breeding habitats that create these types of soils over large areas should be minimized.

Due to the lack of information about the ecology of this species, only rudimentary and preliminary recommendations can be made regarding management actions to protect the species. Additional data collection should be a high priority to understand the ecology, distribution, and population trends of Bendire's Thrashers in California. England and Laudenslayer (1989b) recommended the following long-term research and monitoring program to answer questions about population status, factors affecting distribution, and future management actions.

Monitor isolated populations in the Mojave Desert. This program would confirm breeding and must be designed to determine: (1) population size; (2) whether the breeding occurs every year; and (3) if intermittent, the factors limiting breeding. The monitoring program must be relatively long-term (10+ years) to make these determinations.

Survey apparently suitable habitat lacking breeding records. The goal of this project would be to locate additional breeding populations. If done over several years, the results will indicate whether some areas are used irregularly. Effort should be concentrated in the southern, western, and northern Mojave Desert.

Conduct an extensive survey of the Colorado Desert. This survey would investigate the distribution of Bendire's Thrasher in the Colorado Desert. Existing records suggest that this thrasher may breed regularly in small numbers. The survey would identify breeding locations and document the habitats used by the species in this desert.

Investigate breeding biology. Little is known about reproductive phenology, food habits, nesting ecology, and foraging habits. The study would record basic information that could be used later either to help prepare management recommendations or to predict the impacts of desert projects on Bendire's Thrasher.

Study the impacts of desert land uses on Bendire's Thrasher. One or more studies should investigate the effects of urbanization, grazing, off-road vehicle use, or removing yucca, Joshua trees, and columnar cholla cactus on populations of this thrasher. Joshua tree/yucca/cholla vegetation is one of the more mesic and diverse lowland desert habitats and in many areas simultaneously receives several types of land use. Many wildlife species found in this habitat could be affected by these uses, and the study could easily be adapted to incorporate other species.

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